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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,943

07/05/2006

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EXAMINER

ROYSTON, ELIZABETH

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

10/30/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/584,943	Applicant(s) NOGUCHI ET AL.	
	Examiner Elizabeth Royston	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/17/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12, 17, 18, 20, 22, 24, 26, 28 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 17, 18, 20, 22, 24, 26, 28, and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 12, 17, 18, 20, 22, 24, 26, 28, and 30 are pending as amended on 9/17/2009.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 12, 17, 18, 20, 22, 24, 26, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi (US PG PUB 2003/0143370) in view of Nagata (US PN 6440185) and Slykhouse (US PN 3773573), as evidenced by the MATSUMOTO MICROSPHERE F-series product data.

With regard to claims 12, 17, 18, 20, 28, and 30, Noguchi teaches a method of manufacturing a porous ceramic structure which comprises mixing together a ceramic

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material (paragraph 43, line 3; paragraph 44, line 3), a foamed resin (paragraph 57, line 4), and a forming auxiliary (paragraph 61, line 1-4), forming the mixture into a body (paragraph 63, line 1-4), and then firing the body (paragraph 65, line 1-6).

Noguchi does not explicitly disclose specific details about the foamed resin.

Nagata teaches an acrylonitrile and methacrylate copolymer (col. 5, line 30-31) foamed resin containing greater than 8wt% (10-15wt%) of a C5 gas (col. 6, line 35-48), a particle size of 10 to 200 μm (col. 6, line 2-3), and a shell wall thickness of 0.05 to 5 μm (col. 5, line 52-54). Nagata specifically lists the commercially available product MATSUMOTO MICROSPHERE F-series (col. 6, line 54) as an example of a foamed resin, which has storage stability up to 40°C. Given that the composition, structure, storage temperature, and use of the foamed resin is the same as instantly claimed, one of ordinary skill in the art at the time the invention was made would have expected the retention of gas properties to intrinsically be the same as instantly claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the foamed resin taught by Nagata as the foamed resin taught in Noguchi. The rationale to do so would have been found in the teaching of Nagata that using such a foamed resin in mixtures predictably adds numerous small “pores” (col. 3, line 26-30; col. 5, line 18) to a material (col. 3, line 16-19, line 49-50), which is in line with the motivation provided by Noguchi of using a foamed resin to create a high-porosity structure (Noguchi, paragraph 58).

Noguchi does not explicitly disclose the specific composition of the foamed resin shell.

Slykhouse teaches a foamed resin shell made of a methyl methacrylate - acrylonitrile copolymer comprising 10-90% acrylonitrile (col. 3, line 26-29).

It would have been obvious to one skilled in the art at the time of the invention to use a shell composition such as that in the teaching of Slykhouse as the shell composition in the method of Noguchi in view of Nagata. The rationale to do so would have been the rationale provided by the teaching of Slykhouse, that to use such a foamed resin predictably improves the distribution of discrete gas bubbles (col. 1, line 56-64) in a mixture, which is the same function provided by the foamed resin in the teaching of Noguchi, where the discrete bubbles create a high-porosity structure (Noguchi, paragraph 58).

With regard to claims 22 and 24, Noguchi teaches a honeycomb filter with a plurality of through-holes opened in an exhaust gas inflow-side end face and an exhaust gas outflow-side end face and in which the plurality of through holes are closed alternately in opposite end face portions (paragraph 47, line 1-4).

With regard to claim 26, Noguchi teaches a method of manufacturing a ceramic structure wherein the main components include cordierite and silicon carbide (paragraph 43, line 3; paragraph 44, line 3).

Response to Arguments

5. Applicant's arguments filed 9/17/2009 have been fully considered but they are not persuasive.

With regard to Applicant's assertion that motivation to combine is lacking and the references cited are non-analogous art, the Examiner respectfully disagrees.

Since Noguchi discloses a method of forming a porous ceramic honeycomb filter through the inclusion of a foamed resin, Nagata and Slykhouse are referenced solely for specific details about the physical properties of known pore-forming foamed resins. That pore-forming foamed resins are used in various products does not change the fact that using foamed resins to create pores in materials was known to one of ordinary skill in the art at the time of the invention.

Therefore, the motivation to combine as based upon the rationale found in the teaching of Nagata that using such a foamed resin in mixtures predictably adds numerous small "pores" (col. 5, line 18) to a material (col. 3, line 16-19, line 49-50), and the rationale found in the teaching of Slykhouse that to use such a foamed resin predictably improves the distribution of discrete gas bubbles (col. 1, line 56-64) in a mixture is found to be valid.

With regard to Applicant's assertion that improving the distribution of gas bubbles in a material would not increase the porosity of that material, the Examiner respectfully disagrees.

As explicitly detailed in the teaching of Nagata, the foamed resin forms pores (Nagata, col. 3, line 26-30; col. 5, line 17-22). Slykhouse's method of using a foamed resin to "improve the distribution of discrete gas bubbles" (col. 1, line 56-64) in a material would inherently result in the distribution of "pores" throughout the material. Therefore, were the pore-forming foamed resin in the teachings of Nagata and Slykhouse be used as the pore-forming foamed resin in the teaching of Noguchi, the porosity of the material in the teaching of Noguchi would still inherently improve with the inclusion of such pore-forming foamed resins.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Royston whose telephone number is 571-270-7654. The examiner can normally be reached on M-Th 8:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ER/

Patent Examiner, GAU 1791

/Christina Johnson/

Supervisory Patent Examiner, Art Unit 1791